A New Species of Scorpion of the Vejovidae: Paruroctonus vachoni[1]

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In its natural habitat, *Paruroctonus vachoni,* at first glance, may be mistaken for *Hadrurus arizonensis* (Ewing). This is largely due to the rather dark brown appearance of the mesosoma (preabdomen) and a carapace that has a somewhat light yellow interocular triangle followed by a darker posterior portion. Closer examination reveals a scorpion not nearly as hirsute, much more slender and with more prominently keeled pedipalp chela.

Holotype. An adult female, A.S. No. 61-1, taken December 4, 1960, by R. L. Swett, under a box in a tool shed at Sheep Creek Springs, elevation 1,800 ft, 37 miles north of Baker, California.

Allotype: An adult male, A.S. No. 60-488, collected November 21, 1960, in a kitchen sink at the same locality.

Paratype: A female, slightly shorter than holotype, A.S. No. 1663, collected by O. L. Wallace, September 9, 1955, in residence at Boulder City, Nevada. A large female, A.S. No. 1468.3, collected September 16, 1954, Trona, California, by Warren C. Vogt. Two large females, A.S. Nos. 894.3 and 1107.0, collected by Ann Pipkin, October 1948, in Wildrose Canyon, elevation 3,500 ft, Death Valley National Monument, California.

Diagnosis: *P. vachoni* and *P. gracilior* are similar in coloration but the former shows more redness on pedipalp fingers. Since *P. mesaensis* lacks the brown coloration, the difference in this respect is quite distinctive. The telson vesicle of *P. vachoni* is more globular than that of either of the other two.

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The entire margin of the carapace of *P. vachoni* and *P. mesaensis* is straight while that of *P. gracilior* protrudes farthest at the mid-point. The following table will show other distinctive similarities and differences. Unfortunately, females of *P. gracilior* were not available; the data for the males are taken directly from the types of Hoffman.

TABLE 1.—Comparison of ratios in *P. vachoni*, *P. gracilior*, and *P. mesaensis*

	Pectinal Teeth	VEW/IW	HdW/HdTh	IL/IW
Males:				
P. vachoni	35/35	1.03	1.37	1.64
P. gracilior	26/26, 28/28	0.63–0.66	1.26–1.32	1.04–1.14
P. mesaensis	32/32, 38/39	0.69–0.74	1.24–1.32	1.37–1.42
Females:				
P. vachoni	24/24–27/27	0.76–0.96	1.25–1.47	1.29–1.41
P. gracilior	(not available)			
P. mesaensis	23/23–24/25	0.71–0.73	1.27–1.33	1.21–1.27

Abbreviations:

VEW, Telson vesicle width
IW, Width caudal segment I
HdW, Chela hand width
HdTh, Chela hand thickness
IL, Length caudal segment I

DESCRIPTION OF THE HOLOTYPE:

Carapace: Background color light yellow with diffuse, brown pigment throughout. Anterior two-thirds of interocular triangle only lightly diffuse with dark pigment. Irregularly margined patches of brown lateral to the rather prominent blackish ocular tubercle. Sub-triangular brown spots posterior-median and posterior-lateral corners. Anterior margin straight, bearing about 6 bristles and forming pocket with anterior portion of the distinct median furrow which continues over the median ocular tubercle to form definite superciliary ridges. Very shallow immediately posterior to the tubercle but rapidly increases in depth until, half the distance to the well developed posterior furrow, it forms a deep, narrow furrow. Posterior lateral furrows very broad and shallow. Entire carapace with fine gran-

TABLE 2.—Dimensions in millimeters

	♀ Holotype	♂ Allotype
Pectinal teeth	24/24	35/35
Lengths:		
Total	71.1	85.5
Trunk	28.5	28.1
Cauda	42.6	57.4
Carapace	8.6	9.4
Preabdomen	20.3	18.7
Pedipalp*	29.2	35.7
Tibia	14.4	17.7
Patella	7.5	8.8
Femur	7.3	9.2
Leg IV		
Femur	9.5	11.4
Patella	6.8	7.4
Tarsomere I plus tibia	7.9	10.0
Widths:		
Cauda I	4.9	3.9
Cauda V	2.8	3.1
Telson vesicle	2.9	4.0
Carapace-posterior	8.0	8.3
Preabdomen IV	9.0	9.0

* Minus coxa and trochanter.

ules interspaced freely with much larger granules. Three lateral eyes decreasing in size posteriorly; the smallest out of line with the other two. Frontal lobes moderately prominent.

MESOSOMA (*Preabdomen*). First six tergites entirely brown except for somewhat reticulated light areas laterad and two median ovoid light spots on each tergite. VII light yellow except for anterior median deposit of tan. All tergites densely covered with very fine granules and some larger ones, which increase progressively somewhat in size and number posteriad. Median keels vestigial on all segments but more so on anterior ones. VII also with two pair of lateral keels bearing large cone-shaped granules with similar granules in intercarinal spaces. Sternites I–VI agranular, sparsely hirsute, bearing elongate stigmata. VII with one pair lateral, granular keels and small granules in intercarinal spaces. Pectines long and exceptionally slender; first teeth located one-third pectinal length; basal piece somewhat butterfly-shaped; anterior median notch extends approximately one-half-length. Genital plate not divided; broader than long; no genital papillae.

METASOMA (*Cauda*): Very slender. All segments longer than wide. Vesicle not as wide as segments I–III.

1. Postabdomen: Uniform color, moderately hirsute.

Dorsal keels on I–IV well developed and bearing coarse, more or less uniform granules; on V weakly developed but bearing irregularly aligned granules that get increasingly smaller distad.

Superior lateral keels. Like dorsal keels but incomplete on V. Present on only 0.4 of proximal portion of segment bearing granules of moderate size.

Median lateral keels. Well developed and coarsely granular on I; vestiges on distal end of II and III; lacking on IV and V.

Inferior lateral keels. Well developed on all segments. Granules indistinct on II–V, getting progressively larger distad so that on V they are quite large and irregularly serrate.

Inferior median keels. Not prominent and with a few moderately large granules on I; greater keel development and larger granules progressively distad on remaining segments. V with one median keel bearing large cone-shaped granules.

Anal arch. Proximal ridge with irregularly placed large granules. Distal ridge agranular except for one large granule on extreme lateral end. A row of widely spaced long, coarse bristles in intermediate area.

Intercarinal spaces. All covered with very fine granules; on dorsal and dorso-lateral of segments I–III interspersed with few large granules which are lacking on IV and only sparsely found on V. Large granules almost entirely absent on ventral surface; a few large, distinct granules on V.

2. Telson. Elongate, smooth, bearing some inconspicuous broad granules and slightly hirsute. Two large bristles ventrally and medially at base of aculeus which bears its curvature in distal one-half. Lighter in color than rest of cauda.

Appendages. Of lighter color generally than rest of scorpion.

1. Chelicerae. Inferior border of movable finger with three or more truncated teeth of variable size and shape. Inferior border of fixed finger with three reddish tubercle-like protuberances. Movable finger bifurcate. Superior margins with four teeth; most distal two uniform size, about one-third length of third, fourth about same size as distal two.

2. Pedipalps. Uniform yellow color, fingers slightly reddish. Sparcely hirsute.

Chelae. Small granules on cutting edge of movable fingers non-serrate, arranged in longtudinal row and divided into six groups by six large denticulate granules; flanked internally by five large denticulate granules plus two terminal ones. Fixed finger with a total of six internal flanking granules. On both fingers, but more noticeable on movable fingers, a large bristle immediately posterior to each flanking granules except the two most distal ones. Cutting edges not noticeably scalloped. Hand keels well developed and granular. Lateral keels with larger, reddish granules. Inferior and superior intercarinal spaces largely agranular.

Patella (*Brachium*): All keels distinct and granular. Twenty trichobothria arranged as follows on posterior surface:

Most distal group	2
Diagonal distal group	4
Irregular medial group	8
Sub proximal group	4
Proximal group	2

A few large granules on proximal margin of anterior surface otherwise intercarinal spaces bear only minute granules.

Femur (*Humerus*): Superior keels well developed and bearing large granules. Intercarinal surface well covered with small granules. Inferio-anterior keels well developed and bearing large granules. Inferio-posterior keels vestigial and partially represented by moderately large granules.

3. Walking legs. Tarsal claws long; well developed median claw (unguicular spine); exterior and interior pedal spurs. Tibia and tarsomeres bear long, heavy bristles; longest and

greatest concentration on legs I to III and on tarsomeres I of these legs. Other leg joints sparsely hirsute. Median tarsal lobe triangular with one large bristle on apex and one on each corner of the base. Two bristles on distal edge of lateral lobes. Single row of short, thick spines on sole of tarsomere with two large bristles forming V distad and a cluster of small bristles proximad.

DESCRIPTION OF ALLOTYPE. Relatively shorter trunk; more coarsely granular and more elongate.

Carapace. Differs from female in that granules are larger and denser; not as much dark pigment which is confined largely to immediate lateral areas of ocular tubercle. Anterior margin, furrows and lateral eyes like female. Frontal lobes not as prominent but bear definitely larger granules.

MESOSOMA (*Preabdomen*): Reticulated light spots on first six tergites much larger than in female; the two median light ovoid spots lacking. Granulation similar to female but larger granules considerably more numerous on posterior portion of tergites. Median keels more developed than on female. Second pair of lateral keels on VII represented poorly. Sternites moderately hirsute bearing coarse bristles and densely covered with minute granules. VII with larger keels and granules than female. Pectines large, strongly hirsute with free margin of proximal middle lamella making a 45° angle with fulcral margin. Basal piece similar to female. Genital operculum divided; two conspicuous genital papillae.

METASOMA (*Cauda*): All segments more elongate than on female with vesicle noticeably broader and much lighter in color than segments.

1. Postabdomen. More hirsute than female, bearing coarse bristles.

Dorsal keels. Same as female.

Superior lateral keels. Like female except that on V it is present on proximal half of segment.

Median lateral keels. Same as female.

Inferior lateral keels. Prominent and definitely granular on all segments.

Inferior median keels. Bear small granules on I, agranular on II, somewhat granular on III; IV bearing irregularly aligned large granules and V with one well developed keel bearing serrate granules.

Anal arch. Same as female.

Intercarinal spaces. Same as female.

2. Telson. More globular and proportionately larger than on female. Otherwise similar.

Appendages. Light yellow except reddish tinge to fingers of chelicerae and pedipalps, and on the latter, the large granules of keels.

1. Chelicerae. Same as on female but tubercle-like protuberances on ventral surface of fixed finger may consist of one tooth-like protuberance flanked by clusters of smaller ones.

2. Pedipalps. Finger, redder and more hirsute than on female.

Chelae. Small and large granules of cutting edges like female but both fingers bear large lobes that fit into receiving depressions of opposing finger. The remaining distal portion of each finger mildly scalloped. Hand configuration like female except more strongly developed.

Patella (*brachium*), *femur* (*humerus*) and *walking legs* similar to female.

VARIATIONS. From the table of ratios it is obvious that females vary in pectinal tooth count from 24 to 27; that some females have pedipalp chelae as stout as those of the male is obvious. Also some females have a proportionately broader telson but none approach that of the male. Some females are more coarsely granular, have scalloped pedipalp finger cutting edges, have a varying amount of dark pigment from that of the holotype; but again, for these qualities they differ from the male. Unfortunately, no other males were available.

LITERATURE

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